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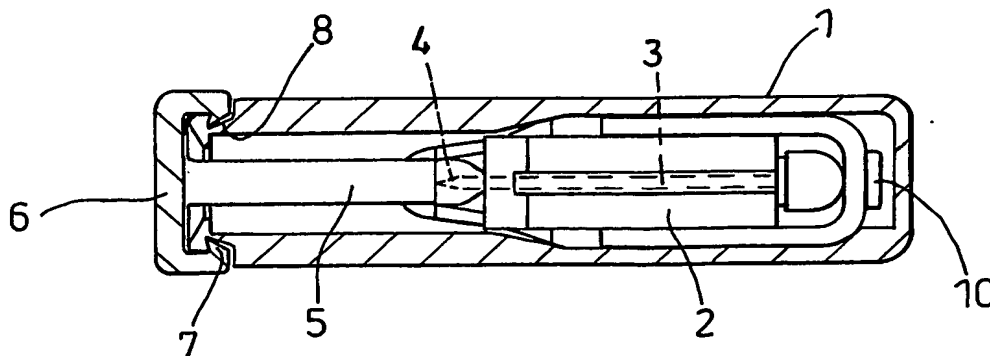
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- Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVEMENTS RELATING TO BLOOD SAMPLING DEVICES



(57) Abstract: A housing (1) retains a lancet body (2) which encloses a needle (3) whose tip (4) is covered by a cap (5). The other end of the cap has a head (6) provided with flanges (7). These flanges locate within notches (8) at the end of the housing (1) on only two sides of the housing (1). The location of the flanges (7) within the notches (8) holds the lancet (2) within the body (1), before use, so as to compress a spring (not shown) positioned between a head (9) and a slotted portion (10) of the housing (1). When the device is to be used, the head (6) of the cap (5) is rotated through 90° so as to detach the cap from the rest of the lancet body and release the flanges (7) from the notches (8). This allows the lancet body (2) to be actuated by a sprung loaded trigger-release mechanism, when required, so that the tip (4) of the needle projects momentarily through the opening at the end of the housing (1) and then bounces back.

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"Improvements Relating to Blood Sampling Devices"

A conventional form of blood sampling device comprises a lancet which is sprung-loaded within a housing so that, upon release of a trigger, the lancet is driven forward to cause a needle tip to project momentarily from an end of the housing to prick the skin of a patient in order to enable a blood sample to be taken. For transportation before use, the needle is covered by a removable cap and the lancet is held within the housing in the sprung loaded condition. There is, however, always the possibility of inadvertent release of the trigger. It is an object of this invention to provide a blood sampling device of this nature which provides greater security against release of the lancet from the housing during transportation before use.

Accordingly, there is provided a blood sampling device comprising a needle-carrying lancet located within a housing and having a cap positioned over the needle, the cap extending to project through an opening at one end of the housing and having one or more locating members fitting into one or more cooperating features of the outer walls of the housing, the cap being twistable to release the locating members from the cooperating features such that the cap can be detached from the housing and from the needle.

Ideally the or each locating member is a flange or rib and the or each cooperating feature is a groove, or vice versa. There could be two flanges fitting into grooves in two opposed sides of the outer walls of the housing.

The cap holds the lancet securely within the housing during transportation, even if pressure is inadvertently applied to the trigger which would otherwise release a drive mechanism to cause a spring to drive the lancet

out of the housing. Before use, the user will rotate the cap relative to the rest of the lancet to enable the cap to be detached and removed from the tip of the needle. This rotation will also release the locating members from the cooperating features, thus enabling the cap to be detached from the device whilst leaving the lancet in its primed state.

In the preferred arrangement, the lancet is sprung loaded to urge the lancet in the direction towards the opening in the housing.

Ideally the device will include a trigger-releasable latch to hold the lancet within the housing such that an exposed needle cannot project through said opening until the latch is released by the trigger.

The invention may be performed in various ways and a preferred example thereof will now be described, with reference to the accompanying diagrammatic drawings, in which:

Figures 1 and 2 are plan and side views respectively of a blood sampling device of this invention;

Figure 3 is a partial cross-section through the device of Figures 1 and 2; and

Figures 4 to 6 show, in cross-section, the device of Figures 1 and 2 in varying stages of use.

The device shown in Figures 1 to 3 comprise a housing 1 retaining a lancet body 2. As can be seen particularly from Figure 3, the lancet body encloses a needle 3 whose tip 4 is covered by a cap 5. The other end of the cap has a head 6 provided with flanges 7. These flanges locate within notches 8 at the end of the housing 1. As can be seen from Figure 4, the flanges 7 and

notches 8 are provided only on two sides of the housing 1.

The location of the flanges 7 within the notches 8 holds the lancet 2 within the body 1 so as to compress a spring (not shown) positioned between a head 9 and a slotted portion 10 of the housing 1. When the device is to be used, the head 6 of the cap 5 is rotated through 90° so as to release the flanges 7 from the notches 8 in the two sides of the housing 1. This allows the lancet body 2 to move forwards (under the bias of the spring) until a ledge 11 on the lancet locates against a flange 12 on the trigger member 13 (Figure 5). Twisting of the cap 5 also releases the cap from the rest of the lancet body 2 at a weakened area 14. The cap can then be removed to expose the tip 4 of the needle within the housing 1, as shown in Figure 6. The blood sampling device can now be actuated by pressing the trigger 13 so that the flange 12 is released from the ledge 11. This causes the lancet to be driven forwards by the spring so that the tip 4 of the needle projects momentarily through the opening at the end of the housing 1 and then bounces back.

CLAIMS

1. A blood sampling device comprising a needle-carrying lancet located within a housing and having a cap positioned over the needle, the cap extending to project through an opening at one end of the housing and having one or more locating members fitting into one or more cooperating features of the outer walls of the housing, the cap being twistable to release the locating members from the cooperating features such that the cap can be detached from the housing and from the needle.
2. A blood sampling device according to claim 1, wherein the or each locating member is a flange or rib and the or each cooperating feature is a groove, or vice versa.
3. A blood sampling device according to claim 2, wherein there are two flanges fitting into grooves in two opposed sides of the outer walls of the housing.
4. A blood sampling device according to any one of claims 1 to 3, wherein the lancet is sprung-loaded to urge the lancet in the direction towards the opening in the housing.
5. A blood sampling device according to claim 4, including a trigger-releasable latch to hold the lancet within the housing such that an exposed needle cannot project through said opening until the latch is released by the trigger.
6. A blood sampling device substantially as herein described with reference to the accompanying drawings.

7. Any novel combination of features of a blood sampling device as described herein and/or as illustrated in the accompanying drawings.

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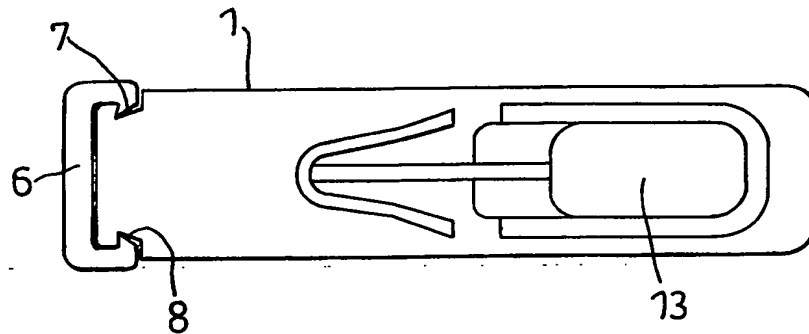


Fig. 1

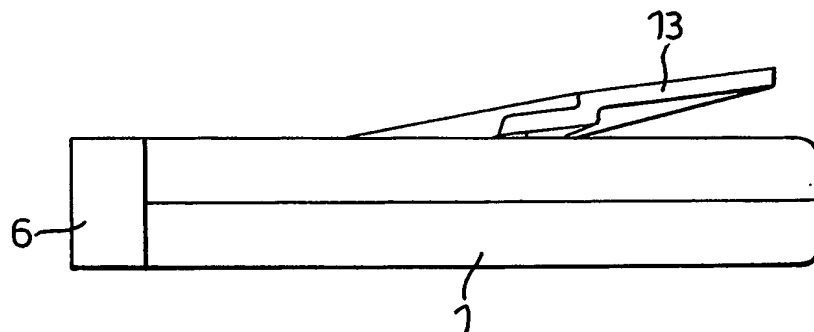


Fig. 2

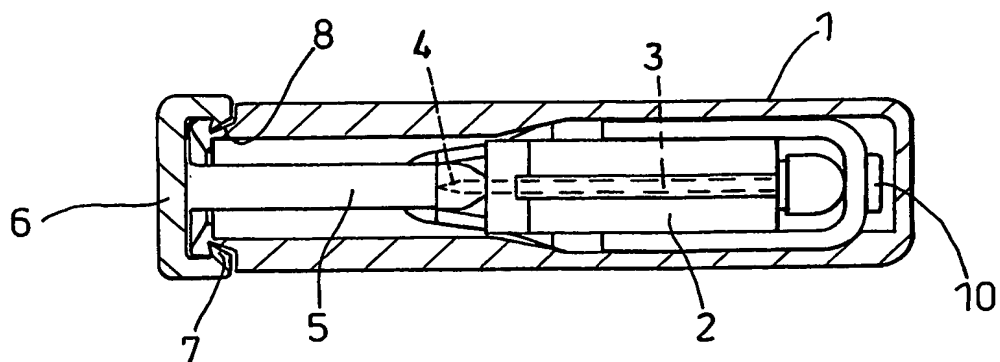


Fig. 3

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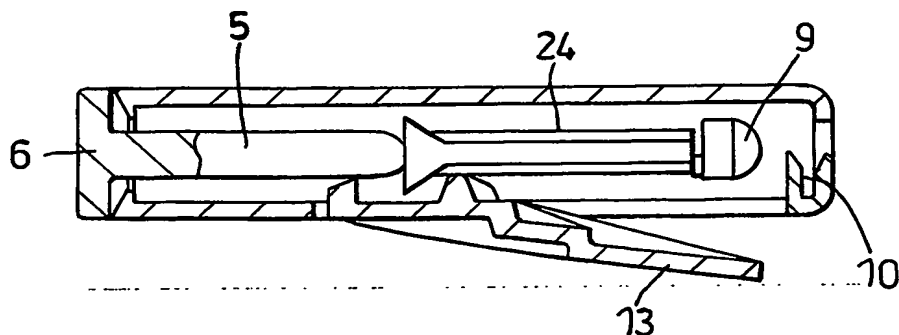


Fig. 4

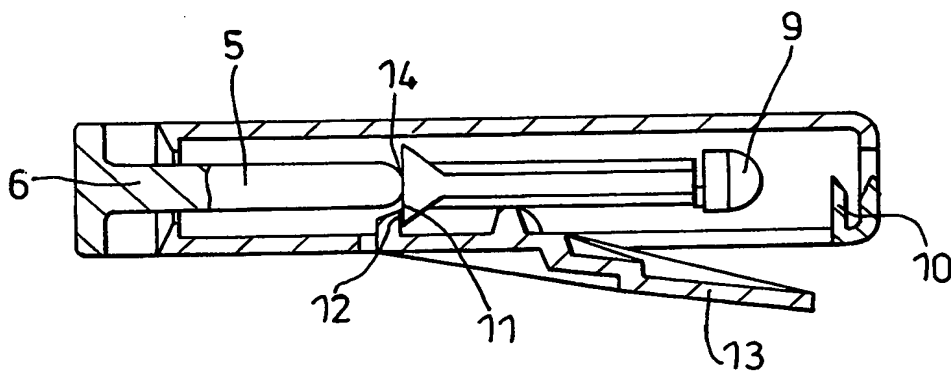


Fig. 5

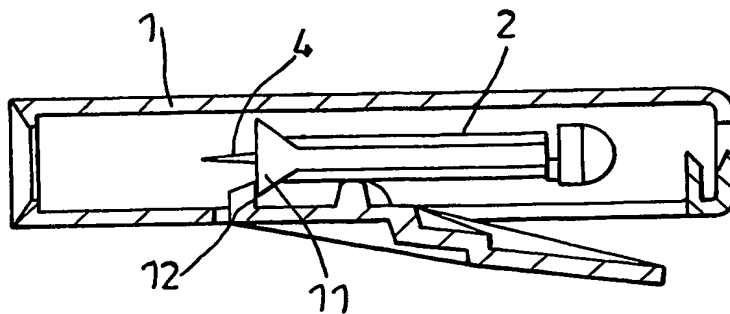


Fig. 6

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INTERNATIONAL SEARCH REPORT

International Application No

/GB2004/003314

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B5/15

Rec'd PGT/PTO 07 JAN 2005
10/520507

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 255 338 A (GLYME VALLEY TECHN LTD) 3 February 1988 (1988-02-03) column 7, line 13 - line 62; figure 2	1,4,5
A	US 5 324 303 A (ORINGER ROBERT ET AL) 28 June 1994 (1994-06-28) column 5, line 62 - column 7, line 29; figures 1-3	1
A	US 5 741 288 A (RIFE DOUGLAS EARL) 21 April 1998 (1998-04-21) column 11, line 18 - line 63; figures 26-28	1,4,5
A	WO 02/43591 A (MARSHALL JEREMY ; OWEN MUMFORD LTD (GB)) 6 June 2002 (2002-06-06) the whole document	1



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

24 November 2004

Date of mailing of the international search report

06/12/2004

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INTERNATIONAL SEARCH REPORT

International Application No. PCT/GB2004 /003314

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 6, 7

Article 6 PCT - The claims are entirely unclear in their scope. Additionally, Rule 6.2(a) PCT forbids the use of references to the drawings in the claims except where absolutely necessary, which however is not the case in the present application.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI; 8.5), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/003314

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 6, 7
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210.
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

GB/GB2004/003314

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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